

# How to meet short-circuit current rating requirements

The 2017 National Electrical Code® (NEC) includes several sections with new short-circuit protection requirements. The most significant changes require that the available short-circuit current<sup>1</sup> at the location where the equipment is installed is marked/ documented and dated.

These changes allow installers, inspectors and approvers to verify that the installed equipment short-circuit current rating (SCCR) is equal to or greater than the available short-circuit current, and compliant with the other code sections dealing with equipment installations.

<sup>1</sup> The available short-circuit current (also known as *available fault current*) is the amount of current that is available during a short-circuit event and is unique to the installed equipment's location.

## Understanding the risk

Equipment with insufficient SCCR may expose personnel to risk or create a fire hazard.

Original equipment manufacturers (OEMs) often struggle with developing equipment SCCR, an SCCR plan or solution for their panels and assisting end users with equipment SCCR specifications that will help support code compliance. Research indicates that more than half of OEMs design to a typical minimum equipment SCCR of just 5 kA.

With the new code requirements to document available short-circuit current and mark equipment with its SCCR, there is the increased chance many equipment installations will not be code compliant or approved.

Developing an equipment SCCR plan or implementing an SCCR solution can be difficult, but it doesn't have to be. Eaton provides a range of solutions that help you achieve available short-circuit current and equipment SCCR code compliance—easily and efficiently.

## What it means for you

The 2017 NEC makes it easier for OEMs, industrials and inspectors to verify proper equipment SCCR protection. These changes include:

### Marking requirements

The available short-circuit current must be field marked at the location where the following equipment types will be installed:

- Machinery
- HVAC equipment
- Elevator control panels
- Generator equipment
- Transfer equipment
- Energy storage equipment
- Battery systems equipment

### Documentation requirements

The available short-circuit current must be documented for the location where the following equipment types are located:

- Motor control centers
- Any other equipment with an industrial control panel



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## 4 steps to calculate equipment SCCR

### 1 Determine SCCR

of components incorporated in the feeder and branch circuits.

### 2 Determine the potential

of current-limiting devices in the feeder circuit to increase the SCCR of branch circuit components.

### 3 Identify interrupting ratings

of all overcurrent protective devices in the feeder and on the primary of control transformers and power supplies.

### 4 Your equipment SCCR

is the lowest value of the component SCCRs, raised component SCCRs, or interrupting ratings of the overcurrent protective devices.



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## Benefits to working with Eaton

Eaton offers customers the most comprehensive experience to achieve compliance by:

### Field-based sales and technical resources

- Eaton's sales and application engineers in every region are available for support. We can help you identify your customer's equipment SCCR needs and provide expert training
- Eaton's application engineers provide free SCCR analysis, including identification of weak links and component substitution options to help you reach your SCCR objective
- Eaton's Electrical Engineering Services & Systems team offers a comprehensive portfolio of services tailored for every stage of a power system's life cycle, including fault current and arc flash studies

### Best-in-class tools

- FC<sup>2</sup> Available Fault Current Calculator (FC<sup>2</sup>) mobile app that easily calculates available short-circuit current and provides documentation and equipment labels
- SCCR Protection Suite online tool that quickly finds components with the device SCCRs needed
- OSCAR™ 2.1 online tool that calculates and documents equipment SCCR for a control panel

### Wide range of code-compliant products and solutions to meet SCCR needs, including:

- Complete portfolio of Bussmann™ series fuses as well as circuit breakers, motor circuit protectors and combination controllers, and current-limiting overcurrent protective devices
- Complete portfolio of fusible and non-fusible disconnects, molded-case switches and compact fusible disconnects, with a variety of device ratings up to 200 kA SCCR
- Complete portfolio of power distribution blocks, power distribution fuse blocks, breaker multi-wire terminals and terminal blocks, with a variety of device ratings up to 200 kA SCCR
- Complete portfolio of IEC, NEMA®, definite purpose contactors and starters, soft starters and drives, and lighting contactors, with a variety of device ratings up to 200 kA SCCR
- Complete portfolio of Eaton enclosures, including B-Line™ series and Crouse-Hinds™ series products

Let Eaton help you increase personnel safety, ensure equipment is properly protected, reduce downtime, reduce project installation time and cost, and increase ROI.

## Frequently asked questions

**Q.** Will the equipment being installed comply with the 2017 code?

**A.** Don't assume that 5 kA SCCR is sufficient. The available short-circuit current must be determined prior to installation, and the equipment SCCR must not be less than the available short-circuit current. Eaton recommends implementing a standardized SCCR that will cover the range of available short-circuit current levels in the segment served. Eaton can help write equipment specifications to meet SCCR requirements as well.

**Q.** There is no SCCR requirement on the equipment specification. What can I do?

**A.** Calculate it with our digital tools including FC<sup>2</sup>, SCCR Protection Suite and OSCAR 2.1 web tools. We can help you develop an equipment SCCR strategy that maintains your competitive edge and minimizes additional engineering effort.

**Q.** What is the available short-circuit current?

**A.** Eaton's FC<sup>2</sup> calculates, documents, dates and provides equipment labels for available fault current so the equipment SCCR needed can be quickly determined. Eaton's engineering services also provides fault current and arc flash studies.

**Q.** Will the code changes result in a higher material cost for my equipment?

**A.** Not necessarily. In many cases, a higher equipment SCCR can be achieved with minimal to no impact on material costs. The key is to identify and solve equipment SCCR issues in the design phase (instead of the installation phase), and to use Eaton's tools and resources to help you plan and solve SCCR issues efficiently.

# SCCR tools



## FC<sup>2</sup> Available Fault Current Calculator

Calculates the available fault current.

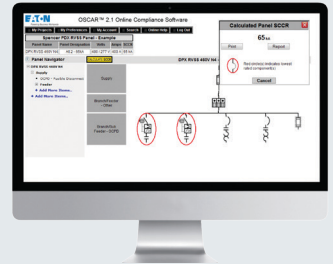
[Eaton.com/bussmannseries/FC2](http://Eaton.com/bussmannseries/FC2)



## SCCR Protection Suite

Identifies which devices have the needed SCCR.

[SCCR.Eaton.com](http://SCCR.Eaton.com)



## OSCAR 2.1 Online Compliance Software

Calculates the SCCR of control panels and identifies weak links limiting SCCR.

[OSCAR.Eaton.com](http://OSCAR.Eaton.com)

To learn more about Eaton's SCCR products and solutions, please visit

[Eaton.com/sccr](http://Eaton.com/sccr)

**Eaton**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
[Eaton.com](http://Eaton.com)

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